



New Jersey's Herp Atlas Project

** Leaping Towards Conservation **

Herp Atlas Volunteer Training Manual

**New Jersey Department of Environmental Protection
Division of Fish and Wildlife
Endangered and Nongame Species Program**

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NEW JERSEY DIVISION OF FISH AND WILDLIFE AMPHIBIAN AND REPTILE ATLAS PROJECT

Section 1

Introduction to the Herptile Atlas

Including:

**Frequently Asked Questions About the New Jersey Herptile Atlas
Other Related Projects**

Frequently Asked Questions About the New Jersey Herptile Atlas

Thank you for participating in the New Jersey Herptile Atlas. This manual contains all the information you will need to survey for reptiles and amphibians as part of the New Jersey Herptile Atlas.

What is the New Jersey Herptile Atlas? The New Jersey Herptile Atlas is a quantitative survey of all reptile and amphibian species (also referred to as herptiles or herps) throughout the state. Volunteers across the state, working with the New Jersey Endangered and Nongame Species Program (ENSP), are collecting data on the specific location and abundance of all reptile and amphibian species in the state.

What is the purpose of the Atlas? The data in the Atlas will be used to map the critical habitat, abundance, and distribution of our state's herp species. This will enable us to monitor changes in populations over time. We will use this data to determine whether a species is declining to the point where it might be threatened or endangered, as well as to document the location of threatened and endangered species. The Atlas will also provide ENSP with the necessary data to inform planning agencies statewide of the status of New Jersey's native herp species, thus allowing all agencies to better plan for our state's wildlife conservation.

What is the history of the Atlas? The Herp Atlas began in 1994. 95% of our data have been provided by volunteers! As of 1998 we have received a total of >4000 records, representing 1600 frog and toad, 1200 turtle, 750 snake, 470 salamander, and 160 lizard sightings. The most common of each group, respectively, were the Green Frog, Eastern Painted Turtle, Northern Water Snake, Redback Salamander, and the Northern Fence Lizard. Atlas volunteers have also provided valuable information about endangered species with reports of Pine Barrens Treefrog, Blue-spotted Salamander, Eastern Tiger Salamander, Southern Gray Treefrog, and the Atlantic Loggerhead Sea Turtle.

What is my role as a volunteer? The participation and enthusiasm of volunteers such as yourself makes the success of the Atlas a reality. The Herp Atlas is funded entirely from Conserve Wildlife license plate fees, U.S. Fish and Wildlife Service's Partnerships for Wildlife grant, and direct donations. Thus, the efforts provided by our volunteers are priceless.

Who can be a volunteer? Anyone who is interested in reptiles and amphibians. Our volunteers are people who use their own free time to explore New Jersey in search of herps. The data provided by our volunteers will help conserve New Jersey's reptiles and amphibians.

What is involved? Each volunteer receives this manual, which includes instructions and a field guide, and data sheets for you to fill out and return to the Atlas. If you have not already done so, you will select an area, or block, to survey. Then, it is time to have some fun! Surveying for reptiles and amphibians can take you through some of the most beautiful habitat that New Jersey has to offer.

How do I select a block to survey? A state map showing the quad divisions is included in this manual. Within a quad, there are six blocks. Pick a block by telling us the nearest towns, and we will assign the block. If we cannot provide you with a quad map, you can purchase one in most outdoors-supply stores or go to <http://mapping.usgs.gov/partners/viewonline.html>.

What if I see herps outside my assigned block? Report any and all herp sightings. You can report herps that you find anywhere. Even though you "adopt" a particular block or blocks, any time you observe herps (while traveling outside your block or observations along the road) you can send in these observations. Please identify the location with road and town names, and distance along road from identifiable intersections, and we will map the data.

Can Returning Volunteers Use Old Data Sheets? The data sheet has been revised for the year 2001 survey. Please review the data sheet and instructions in this manual before using them, and call us if you have any questions.

Can I keep any animals I find? Many herp species are endangered, threatened or declining. Individual animals, as well as their breeding and living sites, must be protected if populations are to persist. To help preserve populations for future generations, take only photos, and leave the animals where you find them. Please do not share your findings with anyone but us in The Division of Fish and Wildlife.

What if I see something unusual? Recent scientific inquiries have shown that mass die-offs and malformations of amphibians may be attributed to decreased environmental quality and disease. Fortunately, New Jersey has had no significant cases so far. Please report any malformed or dead amphibians (salamanders, frogs, toads) with no known cause of death (for example: roadkill).

Who do I contact for more information? Call the Endangered and Nongame Species Program at 609-628-2103, email Llsmith@gtc3.com, or write to:

Herp Atlas
Endangered & Nongame Species Program
NJ Division of Fish and Wildlife
2201 County Route 631
Woodbine, NJ 08270

Other Related Projects

The Herp Atlas is a part of New Jersey's **Landscape Project**, which is designed to provide active management and habitat protection through the cooperative efforts of land managers, state regulators, local planners and citizens. The Landscape Project combines technologies such as remote sensing and computerized mapping with biologically-based identification of habitat needs of endangered species, to identify critical habitats for preservation.

As part of the Landscape Project, the **Vernal Pool Project** is dedicated to mapping vernal pools and surveying their wildlife. Vernal pools are temporary wetlands that appear annually at the same site in the spring but dry out later in the summer. These ephemeral ponds lack fish. This makes them critical breeding habitat for many amphibians, whose eggs and larvae benefit from the absence of predators. Vernal pools are under serious threat from development. Their disappearance threatens the existence of several species of amphibians, some of which breed only at vernal pools. Herp Atlas volunteers will be asked to identify and map vernal pools in their blocks, and to survey herps at the vernal pools in their blocks. This data will help protect these transient and fragile aspects of the landscape and the animals that are dependent on them.

The Division's Endangered and Nongame Species Program is also involved in a nationwide volunteer oriented program that provides invaluable herp data. The **Calling Amphibian Monitoring Program (CAMP)** is a program that uses the uniqueness of male frog and toad calls to identify species and estimate population densities and trends of calling amphibians. **CAMP** is a part of a national effort to address declines in frog and toad populations. Volunteers survey a set route 3 times a year in order to detect all potential calling frogs and toads. The data collected will be compiled over the years, allowing biologists to study population trends. **Please contact us if you are interested.**

NEW JERSEY DIVISION OF FISH AND WILDLIFE AMPHIBIAN AND REPTILE ATLAS PROJECT

Section 2

Instructions

Including:

**General Instructions
Data Sheet Guidelines
Line-by-Line Instructions
Sample Data Sheet
Habitat Classification System**

General Instructions

The goal of New Jersey's Herp Atlas is to document the distribution and abundance of amphibians and reptiles ("herptiles" or "herps") throughout the state. By learning the numbers, critical habitats and ranges of herps we will be able to keep track of populations over time. This information will help us more accurately determine the ranges and habitats of threatened and endangered species, and will help us identify which species may be declining to the point of being threatened or endangered.

The success of the Atlas depends on the efforts of volunteers--over 95% of our data is provided by volunteers. Your help as a volunteer is invaluable! These instructions will give you the information you need to have an enjoyable and productive experience as part of the New Jersey Herptile Atlas.

How to Get Started:

Volunteers are assigned a block in which they will search all suitable habitats for herps throughout the year. The blocks in the Herptile Atlas are based on the sample areas used in the Breeding Bird Atlas, which are 1/6th blocks of topographic quad maps (roughly three miles by three miles).

If you have not already done so, please contact us as soon as possible to adopt your block. A state map showing the quad divisions is included in this manual. Within a quad, there are six blocks. You can pick a block by telling us the nearest towns and we will assign the block. If we cannot provide you with a quad map, you can purchase one in most outdoors-supply stores or access <http://mapping.usgs.gov/partners/viewonline.html>.

All herp atlas volunteers must fill out and send in the **Wildlife Conservation Corps form** that is included with this packet. We also ask that volunteers keep track of their hourly involvement in the program by completing and returning copies of the **Wildlife Conservation Corps Volunteer Monthly Report** that is located in the appendix of this packet. This will ensure that your volunteer hours are recorded. You will receive an ID card indicating that you are a member of the Wildlife Conservation Corps, and you will also receive reports about the progress of many of the Division's projects.

Where to go:

We wish to record as much information for each block as possible. Each block will probably contain several suitable habitats. Herps can be found in a variety of habitats ranging from small wetlands such as ponds, ditches and vernal pools (spring breeding habitat for most amphibians), to larger wetlands such as rivers and lakes, to fields and forests (for upland turtles and snakes).

So seek out and visit suitable habitats wherever they occur in the block. Many small wetlands valuable to reptiles and amphibians do not show up on the quad map, but you can find clues to their location by using elevation lines on the quad map. You can also drive local roads and listen for Spring Peepers and other frogs calling on spring days and nights.

Incidental findings are also useful--if you happen to see herps outside your assigned block, please feel free to send us the information about them. This includes animals (alive or dead) seen along the side of the road. Be sure to include detailed location information, just as you would for animals in your assigned block. Please identify the location with road and town names, and distance along road from identifiable intersections, and we will map the data.

When to go:

You should plan to spend about 40 hours over the course of the year searching for herps. It's good to spread this out over the seasons, since different species will be easier or more difficult to find at different times of year and in different conditions. Spring through early summer, and late summer through fall, are usually the most productive times of year, although a few species (for example: tiger salamanders) are best found during their winter mating seasons. In addition, try to vary the time of day when you go searching--optimal times will vary with habitat, species and time of year.

What to bring with you:

Essential items include: data sheets and topos, field guide, pens or pencils (preferably something that won't smear in wet conditions), identification letter and Wildlife Conservation Corps ID card.

Also good to have along: camera and tape recorder (to help verify rare or hard-to-identify species), thermometer (important for identifying certain frog calls), a long stick (to turn things over from a distance in poisonous snake country), county maps, GPS unit, flashlight or headlamp, rubber boots &/or hip waders, dip net, binoculars (useful to identify basking turtles).

Carry the Identification Letter and Wildlife Conservation Corps ID card with you. This letter (on the Department of Environmental Protection letterhead) is in the Appendix of this manual. The Identification Letter identifies you as a participant in the Herp Atlas, and the ID card indicates that you are doing volunteer work for the state. These IDs do not permit you to trespass on private land, but may help you get permission to enter private land. They also do not permit you to possess any animal--leave the animals where you find them and take only photographs.

Species Identification:

This manual contains a list and a field guide of amphibians and reptiles native to New Jersey, as well as a list of suggested reference materials that will help you identify these animals by sight and call. The best reference book is *A Field Guide to Reptiles and Amphibians of Eastern and Central North America* (a Peterson Field Guide) by Conant and Collins, 1998. In addition, audio tapes of frog calls are available--call us for a copy.

If you are uncertain of a species ID, do not enter the data! Some species are very difficult to distinguish--these are listed in capital letters in the list of New Jersey reptiles and amphibians later in this manual. You may submit a photo with the data sheet for species identification, provided it is of suitable quality and shows the necessary field marks.

Please Use Caution!

Participation in this survey does **not** allow you to trespass on private land or collect amphibians or reptiles. Respect landowner rights and ask permission to enter private land where that is appropriate.

In your search for animals, please do not unduly disrupt their habitats. Habitat degradation and illegal collecting have been significant in the decline of several species, and we do not want the Atlas Project to contribute to these problems.

Use Extra Caution when you observe venomous snakes and *do not attempt to handle them!* Also be aware that many ticks carry Lyme disease or other diseases -- check yourself for ticks after each field trip.

When and where to send data sheets:

We would prefer that you send all your data sheets together on or around September 30. However, if you have observed an endangered or threatened species, please send the data sheet immediately--that data may be crucial for ongoing conservation efforts.

Send data sheets to:

Herp Atlas

Endangered & Nongame Species Program
NJ Division of Fish and Wildlife
2201 County Route 631
Woodbine, NJ 08270

FILLING OUT THE HERP ATLAS DATA SHEETS

GUIDELINES:

This is the most important aspect of your work, and will enable us to accurately document species distribution in the state. The most critical information for the database are the detailed location, the sighting data, and conditions (temperature and humidity) for frog call identification, plus supporting documentation with photographs or tape-recordings when possible.

Take data sheets into the field with you, and fill them out at the site.

Record as much detail as you can in the field, while it is still fresh in your mind. If you are unsure of the quad or block number, complete those sections as soon as you return home. We must have detailed location and verification information in order to record the species data.

Use one data sheet for each site and each day you go out. The data sheet is now a record of a particular day's visit to a site. Record all species you encounter on a site visit on a single data sheet. If you return to the same site later, you may find more or fewer species, depending on the season and weather conditions.

Please note your start time and total time spent searching for herps for each trip to a site. Time spent (a measure of effort) will be important in later years as we repeat herp surveys in your area, and try to determine trends in populations.

We need detailed location information, as well as the block number and topo map name, to record your data in the database. Accurately identify the site locations on your block map, then mark each site on your topographic map and give each site a unique name. The "Directions to the Site" section of the data sheet should include an accurate description of how to get there, the town, and the county. It may help to carry a county map with you to double-check your location. GPS (Global Positioning Satellite) units are also helpful, although not necessary, to pinpoint your location.

Verification: *Do not collect any individuals.* You may, for the purposes of identification and photography, pick up an animal or dip-net tadpoles, then return them immediately to the same place. If you have a camera you can use photographs to help document rare species that you encounter. You may also tape-record frogs calling at a site, record time, temperature and humidity, then identify the calls later and/or submit them to us. Label all photos or tapes with your name, the site name, date and species.

FILLING OUT THE HERP ATLAS DATA SHEETS

LINE BY LINE INSTRUCTIONS:

Side 1

Species List: Don't just check off—provide the number, type and verification of each species you identify.

(Number): Record the exact number, or estimate into one of these classes: 1, 2-5, 6-10, 11-25, 26-51, 100's, 1,000's.

Type: Fill in the code for the life stage (**A**=Adult, **J**=Juvenile, **L**= Larvae, **E**= Eggs). It's optional here to also indicate sex (**F**=Female, **M**= Male). If there are multiple life stages, please list the data for the additional stages in the Notes section.

Ver. (Verification): Fill in the code for verification level found at the bottom of the page. For rare species, a photograph or taped call is best to confirm the sighting; however, **the individual should not be removed!** Please carry a camera (and when appropriate, a tape recorder) with you or return later to photograph or tape calls. For the purpose of this survey, volunteers are permitted to handle a rare species for identification, but animals may not be removed from their habitat. Label the photo with your name, site location, date and species, and staple it to the data sheet to insure it does not get misplaced.

-Side 2-

Site Name: If the site already has a name on the topographic map, use that name here. Otherwise, create a name unique to that site that will also be used to mark the location of the sighting(s) on the topographic map.

Quad #: U.S.G.S. topographic map name and number.

Block #: The topos are divided into 6 blocks, numbered as:

1	2
3	4
5	6

Date: Survey date, including year. Please use the format: "June 20, 2001," to avoid confusion in numeric dates.

Observer: The observer's name.

GPS Position: This item is optional. If you are using a GPS unit, record the coordinates here, preferably latitude/longitude. If you are not using the latitude/longitude system, please specify the coordinate system you are using.

Directions to the Site: Provide written directions to the site, including nearest town, road names, and distance and direction from the road to the site.

For Example: "Cumberland County, 1/2 mile north of Eldora on Rt. 47; dirt road on right, go down 1/4 mile; pond is on right."

****Mark the location on your topo map for sightings of all species!****

Time Spent Searching on This Visit: Very important! Record your start and end times for each site visit. Use 24-hour time (for example, 2:00 PM=1400).

Your Activity: Fill in the code that best describes your survey activity this day, this site.

Conditions: Record **Temperature** and estimate the **Humidity** at the time of survey. This is critical information for accurately identifying frog calls! For species other than frogs, please record the information if you have it.

Site Description: Circle all the habitat types that best describe the location. For example, circle “mixed forest,” “old field” and “gravel pit pond” if they all apply to a breeding pond site. You may add in the Notes section other descriptions such as 25% old field, 75% mixed forest, for accuracy. (Note: The following section of this manual explains how habitat types are classified).

Notes: Provide any other information about the site, such as threats (off-road vehicle use, pollution problems, etc.), land ownership information, etc. This is also the place to give greater description to the species found.

Contributor(s): Please provide your name, address and phone number on each data sheet. We may contact you to confirm your information, especially for rare species.

RETURNING DATA:

Please return the data sheets, along with photocopies of your topographic map with each site marked and labeled, by September 30. Keep verification (photo or tapes) with data sheets to avoid confusion and misplaced materials. Label photos and tapes with your name, site name, species (if known) and date. *If you have data sheets with sightings of endangered or threatened species, please return them immediately, because that information may be crucial for ongoing conservation efforts.*

Send data sheets, topo photocopies and supporting photos and tapes to:

Herp Atlas
Endangered & Nongame Species Program
NJ Division of Fish and Wildlife
2201 County Route 631
Woodbine, NJ 08270

Site Name_____ Quad#_____ Block#_____

****MANDATORY--must match site name on topographic map!**

Date_____ Observer_____ GPS Position_____

****DIRECTIONS TO THE SITE:** (One site per sheet for each day out, include town, road & directions)

IMPORTANT INFORMATION--

TIME SPENT SEARCHING ON THIS VISIT: Start Time_____ End Time_____

Use 24 hour time (for example, 2:00 PM = 1400)

YOUR ACTIVITY: _____ (Use code)

1 = Listening 3 = Turning over rocks, logs 5 = Opportunistic (not searching
2 = Walking/searching habitat 4 = Driving (road surveys during rain) for herps at time of sighting)

CONDITIONS: Temperature:_____ Humidity:_____ (Low, medium, high)

SITE DESCRIPTION (circle applicable):

Terrestrial Habitats

Deciduous forest	Suburban area
Coniferous forest	Urban area
Mixed forest	Rock outcropping
Disturbed forest	Beach/dune
Old field	Natural grassland
Agricultural	Garden/lawn
Rural area	

Aquatic Habitats

Lake	Freshwater marsh
Pond	Saltwater marsh
Vernal pool	Wooded swamp
Gravel pit pond	Shrub swamp
River	Fen
Stream / brook	Bog
Drainage ditch	Man-made basin
Seep/spring	Open ocean

NOTES:

*Note other life stages of species present, if applicable*_____

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Contributor(s):

Name_____

Address:_____

Phone: _____

Return data sheets by September 30 to:

Herp Atlas

Endangered & Nongame Species Program

2201 County Route 631

Woodbine, NJ 0827

	#	Age	Sex	Ver.		#	Age	Sex	Ver.
Turtles					Salamanders				
Common Snapping Turtle					Marbled Salamander				
Common Musk Turtle					Jefferson Salamander				
Eastern Mud Turtle					Blue-spotted Salamander (E)				
Spotted Turtle					Spotted Salamander				
Bog Turtle (E)					Eastern Tiger Salamander (E)				
Wood Turtle (T)					Red-spotted Newt				
Eastern Box Turtle					Northern Dusky Salamander				
Diamondback Terrapin					Mountain Dusky Salamander				
Common Map Turtle					Redback Salamander				
Red-eared Slider					Northern Slimy Salamander				
Redbelly Turtle					Four-toed Salamander				
Eastern Painted Turtle					Northern Spring Salamander				
Eastern Spiny Softshell					Eastern Mud Salamander (T)				
					Northern Red Salamander				
Snakes					Northern Two-lined Salamander				
Northern Water Snake					Longtail Salamander (T)				
Queen Snake									
Northern Brown Snake					Lizards				
Northern Redbelly Snake					Northern Fence Lizard				
Eastern Garter Snake					Five-lined Skink				
Eastern Ribbon Snake					Ground Skink				
Eastern Smooth Earth Snake									
Eastern Hognose Snake					Frogs & Toads				
Northern Ringneck Snake					Eastern Spadefoot (toad)				
Southern Ringneck Snake					American Toad				
Eastern Worm Snake					Fowler's Toad				
Northern Black Racer					Northern Cricket Frog				
Rough Green Snake					Pine Barrens Treefrog (E)				
Smooth Green Snake					Northern Gray Treefrog				
Corn Snake (E)					Southern Gray Treefrog (E)				
Black Rat Snake					Northern Spring Peeper				
Northern Pine Snake (T)					Chorus Frog (ssp. unknown)				
Eastern Kingsnake					Upland Chorus Frog				
Timber Rattlesnake (E)					New Jersey Chorus Frog				
"Coastal Plain" Milk Snake					Bullfrog				
Eastern Milk Snake					Carpenter Frog				
Northern Scarlet Snake					Green Frog				
Northern Copperhead					Wood Frog				
					Southern Leopard Frog				
					Pickerel Frog				

Abundance (#): 1, 2-5, 6-10, 11-25, 26-51, 51-100, 100-999, >1,000

Species Age: **A:** Adult; **J:** Juvenile; **L:** Larvae; **E:** Eggs

Species Sex: **M:** Male, **F:** Female, **U:** Unknown, **MTO:** More than one present

Ver: Verification & Evidence:

P: Photograph	C: Call heard (frogs)	SS: Shed skin (snakes)
TC: Taped call (frogs)	DOR: Dead on road	TR: Tracks
CR: Captured, ID & released	D: Found dead	Other (specify): _____
OB: Observed w/o capturing	R: Remains (bones, shell)	

HABITAT CLASSIFICATION SYSTEM

Terrestrial Habitats:

Deciduous forest--forest in which 75% or more of the stand is composed of deciduous species (that is, trees with flat leaves rather than needles, and that shed their leaves annually, such as oaks or birch)

Coniferous forest--forest in which 75% or more of the stand is composed of coniferous species (that is, trees with needles and cones, such as pines or cedars)

Mixed forest--forest containing both coniferous and deciduous species with neither group composing more than 75% of the stand

Disturbed forest--forest with obvious human intervention (other than changes limited to trails)

Old field--open areas not currently used for agriculture or other purposes, may include a scattering of small shrubs or trees, but most of the vegetation consists of grasses and herbaceous species

Agricultural--land managed for grazing or cultivation

Suburban area--multiple houses and/or businesses with surrounding lawns and other planted areas

Urban area--multiple houses and/or businesses primarily surrounded by buildings and paved areas

Aquatic Habitats:

Lake--a large body of water (10 acres or greater) completely surrounded by land

Pond--a small body of water (less than 10 acres) completely surrounded by land

Vernal pool--a shallow body of water lacking fish that dries up some time during the year

Gravel pit pond--a body of water filling a gravel pit

River--a body of water of fairly large size flowing in a definite course or channel

Stream/brook--a body of water flowing in a channel or watercourse, smaller than a river

Marsh--treeless wetland, may be bordered by trees. Predominant vegetation may include cattail, Phragmites, purple loosestrife, sedges, rushes, other emergent species. Please indicate in notes if freshwater, freshwater-tidal, or brackish.

Shrub swamp--wetland with greater than 25% cover of woody species that are less than 6 m (20 ft) in height; remaining area may be open or contain herbaceous vegetation; contains few or no woody species over 6 m (20 ft) tall; standing water may be present

Wooded swamp--wetland with greater than 25% cover of woody species that are greater than 6 m (20 ft) in height, standing water may be present

Bog--herbaceous wetland consisting of a floating mat of peat; woody vegetation scarce

Fen--herbaceous wetland fed by perennial groundwater discharge, standing water less than 2 inches in depth

NEW JERSEY DIVISION OF FISH AND WILDLIFE AMPHIBIAN AND REPTILE ATLAS PROJECT

Section 3

Getting out There

Including:

**The Great Herp Safari, or How to Find the Critters
Poisonous Snakes: Sensible Precautions
Protect Yourself From Tick Bites
Guide to Reading Topographic Maps
Vernal Pools**

THE GREAT HERP SAFARI, OR HOW TO FIND THE CRITTERS

Reconnaissance: Check Out Your Block Early in the Season

Visiting your block early in the year is important! It's easier to scout out an area before leaves or shrubs block your views of potential sites. And you might even find species which breed in the winter, such as tiger salamanders (which have been seen courting in ice-covered pools, in January).

So, as early in the season as you can, examine your topographical map for the distribution of habitat, such as forested uplands, stream corridors, swamps, ponds, dirt roads, etc. Then visit the area and investigate the sites. Since many of these maps have not been updated since the 1970's, changes will have occurred. Note on your map any new developments, roads, and other habitat alterations. Familiarize yourself with the layout of your block, making notes of good areas for future surveys. Many small seasonal ponds (also called vernal ponds) are not shown on the topo maps, so jot down the location of any you find for future searching. (See also the section on vernal ponds later in the manual, for further detail about these ephemeral and ecologically important habitats.)

Searching for Amphibians

Amphibians are closely associated with wetland habitats, which they require for breeding. Since different habitats will be preferred by different species, make sure you survey a range of wet sites, such as ponds and lakes, rivers and streams, stagnant ditches and small seasonal pools. Some species are specialists, preferring very specific habitats, while others have much broader preferences. Information on preferred habitats can be found in the individual species descriptions in the Field Guide.

Frogs and Toads

Frogs and toads use a variety of wet sites. For example, Bullfrogs are among the few amphibians that can be found in large fish-inhabited lakes, while Pine Barrens Treefrogs prefer open sphagnum swamps with low pH and no fish. Toads may be found at wet sites, but, unlike most frogs, they may also be found at some distance from water.

During their mating season, frogs and toads produce easily recognizable calls. The best way to survey for frogs and toads is to visit wetlands on warm humid or rainy evenings in the spring and early summer and listen for vocalizations. Since there are only a handful of species, you can learn to distinguish between their calls with relatively little effort. Contact us for a tape of frog and toad calls.

Salamanders

Salamanders usually have preferences for very specific microhabitat types, but all salamanders require a humid environment. Some types are completely aquatic, such as adult Red-Spotted Newts and adult Four-Toed Salamanders, while other salamanders are found only a very short distance from water, such as Long-Tail Salamanders. On the other hand, some species, such as the Marbled Salamander, or the Mountain Dusky Salamander, may be found quite a distance away from water, as long as they have a humid environment such as rainy weather or a moist hiding place.

Salamanders tend to be secretive. Usually, you will need to actively search for them. Only rarely will you encounter them in the open, although there are exceptions, such as red efts (the intermediate terrestrial stage of the Red-Spotted Newt), which can be seen out on the forest floor on very humid or rainy days. But normally you will be more likely to find salamanders by carefully looking under logs, bark, rocks and other debris on the ground. Please avoid squashing these fragile creatures--first, carefully replace the object as you found it, and then release any salamanders you may have captured.

Searching for Reptiles

Reptiles are not nearly as dependent on water as amphibians, so some may be found in fairly dry environments. Again, habitat preferences vary, so check the Field Guide for specific habitat preferences.

Turtles

Most turtle species are found in wet areas. Some may be easily seen on a warm spring day sunning themselves on stumps in a lake or pond. Females may be observed as they move to drier sites

to lay their eggs. Other turtles, such as the Eastern Box Turtle and Wood Turtle, are associated with upland sites.

Snakes and Lizards

Snakes and lizards can be spotted during the day sunning themselves in relatively open areas such as rock outcroppings or dirt roads. Don't always look down! Some snakes and lizards spend time in the trees. Fence lizards camouflaged against the bark of a tree can be spotted by an observant eye. Note that the tails of lizards break off easily, so be very careful when handling these animals.

Most of the time, however, you will need to search for lizards and snakes by looking under logs, loose bark, rocks, old trash, boards, and other debris. Take care to search gingerly, and leave the habitat as you found it. A pole with a hook on one end makes an excellent tool for turning over logs and boards from a safe distance. (This is especially important in poisonous snake territory!) A simple pole can be made by taping a bent coat hanger onto a broomstick with duct tape.

When to search for herps

It is important to visit a site several times throughout the season to account for all of the species present. Although there is no set number of times to visit a location, we recommend at going least three times. Breeding seasons vary, so try to go often enough to get an accurate representation of species occupying a particular area. It is important to go out early in the year to find breeding amphibians, while snakes and turtles are more visible throughout the summer.

In addition, be sure to visit sites at different times of day and in varied weather conditions throughout the season. High humidity provides optimum conditions for many amphibians: rainy days and evenings are good times to listen for frogs and toads, or find roaming salamanders, while snakes and lizards may be found basking in the sun in the morning.

How to search for herps

To prevent herps from being scared away before you identify them, it helps to approach slowly and look with binoculars first. You might want to bring a camera, both for your own pleasure, and as an aid in identification. If you are listening for frogs and toads, it might be helpful to bring along a small tape recorder. You can tape calls you are unsure of for later comparison with the frog tape. A flashlight, rubber boots, and net can really aid in your adventures. Roads also are a good place to find herps; unfortunately, they are often dead. However, even road-killed animals can provide valuable data.

Poisonous Snakes: Sensible Precautions

Two species of poisonous snakes are native to New Jersey: the Northern Copperhead (Agkistrodon contortrix mokasen) and Timber Rattlesnake (Crotalus horridus). Both species have limited ranges in the state. The Copperhead has been found in the Northern region of the state, including Sussex, west Passaic, Warren, Morris, Hunterdon, Somerset, and Mercer counties. The Timber Rattlesnake has been found in the Southern region of the state in Atlantic (inland), Ocean (inland), south Burlington, east Gloucester and northeast Cumberland counties; and in the Northern region in west Passaic, north Morris, west Warren and Sussex counties.

In regions where poisonous snakes may be found, take these sensible precautions to avoid being bit:

- ⌘ Do not handle poisonous snakes! Most bites happen when people get too close and annoy the snake.
- ⌘ Learn to recognize poisonous snakes. Both the Copperhead and the Timber Rattlesnake have the triangular heads and vertical pupils common to pit vipers; they also have characteristic color patterns. If you aren't sure of identifying marks, don't put yourself in biting range by getting close enough to check. Use binoculars instead.
- ⌘ Look where you are stepping and where you are placing your hands. Stay on trails as much as possible. Snakes like to sun themselves on warm ledges, and they like to hide under logs. Don't place your hand on or under a rock ledge unless you can see what's there. If you can't see over a log, step on top first and then look down before stepping down.
- ⌘ When searching for herps in poisonous snake country, use a long sturdy stick (such as a broom handle) to turn over substrate such as logs, boards or bark.
- ⌘ Most poisonous snakebites are not fatal when properly treated, but they must be treated promptly. If you are bitten by a poisonous snake, get to a hospital as quickly as you can. Have someone help you to the car and drive you there, if possible. Also, if possible, have someone call ahead to allow the hospital to make preparations to treat you. Avoid snakebite kits, or cutting and sucking the wound. Do not use tourniquets. Just get to the hospital.

Protect Yourself from Tick Bites

Ticks can transmit potentially serious illnesses, so it is important to protect yourself from tick bites. The three types of ticks in New Jersey, from smallest to largest in size, are Deer Ticks (*Ixodes dammini*), Lone Star Ticks (*Amblyomma americanum*), and Dog Ticks (*Dermacentor variabilis*). Deer Ticks and Lone Star Ticks may be carriers of Lyme Disease and other less-common diseases including babesiosis and erlichiosis. Dog Ticks may carry Rocky Mountain Spotted Fever and tularemia.

The following precautions are suggested to decrease the risk of being bitten by a tick:

- € Wear light-colored clothing so ticks can be spotted more easily.
- € Wear a hat, long-sleeved shirt, and long pants for added protection.
- € Tuck pant legs into socks and tuck your shirt into your pants. You can also wrap duct tape around pant cuffs. Ticks grab onto feet and legs and then climb up. This precaution will keep ticks on the outside of your clothes where they can be spotted and picked off.
- € Wear repellents, applied according to label precautions. Applications to shoes, socks, cuffs and pant legs are most effective against ticks.
- € *NOTE: These repellents can be toxic to reptiles and amphibians. Do not handle animals if you have applied repellents.*
- € Thoroughly inspect your head and entire body (including nape of neck, armpits and groin) after leaving the field. Have someone check your back, or use a mirror. Early detection and removal of ticks is a crucial prevention step. Note that Deer Tick larvae can transmit disease, and they are tiny, about the size of the period at the end of this sentence.

To properly remove a tick:

- € Ticks should be removed using fine-tipped tweezers. Grasp the tick as close to the skin as possible and slowly (and firmly) pull it straight out. Check to make sure the mouthparts did not break off in the wound. If they did, seek medical attention to get them removed.
- € Never apply Vaseline, mineral oil, heat or any substance that could cause the tick to regurgitate bacteria into the wound.
- € Always wash your hands after handling a tick.
- € You may want to save the tick in a small jar for later identification. Call your local Board of Health for details on how to save the tick and where to send it for identification and testing, if you so desire.
- € If you get any symptoms of Lyme disease (such as a rash and/or a flu-like illness) in the following week to several months, see a physician immediately. Be sure to tell the doctor that you were bitten by a tick and request a blood test to determine exposure to Lyme disease.

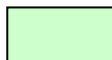
Guide to Reading a Topographic Map



0.05 0 0.05 0.1 Miles



Field or vegetated herbaceous



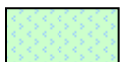
Vegetated-forest



Water



Non-forested wetlands



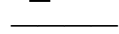
Forested wetlands



Disturbed wetlands



Buildings



Contour lines



Heavy-duty road



Medium-duty road



Light-duty road



Unimproved dirt road



Vernal Pools

Early in the spring, water collects in depressions in the ground, where it forms pools that remain until sometime in the summer. These seasonal ponds are called vernal pools and form a critical habitat for several species of herps. Vernal pools have these important characteristics: they are temporary, but recur in the same location from one year to the next; they lack inflow and outflow; and they do not contain fish.

The absence of fish makes vernal pools ideal locations for amphibians to lay their eggs, since the larvae can grow and develop with much reduced risk of predation. Several species of amphibians in New Jersey depend on vernal pools for breeding habitat. Obligate vernal pool breeders must use vernal pools, while facultative vernal pool breeders use vernal pools as well as other habitats. Several of these species are threatened or endangered in New Jersey. These species are listed in the table below.

New Jersey is losing vernal pools to development at an alarming rate. The loss of this critical habitat puts the species that depend on vernal pools at risk. The Vernal Pool Project is a part of the Landscape Project dedicated to locating vernal pools, surveying the fauna that use them, and identifying the pools that are at risk from development. Since vernal pools often do not show up on topographic maps, Herp Atlas volunteers are asked to help this program by mapping any vernal pools that they find, and paying special attention to surveying the species that they locate in and around the vernal pools. By doing so, Herp Atlas volunteers will be providing significant assistance in preserving these ephemeral habitats, as well as the animals that depend on them.

Table: Vernal Pool Herpetofauna

Obligate Species	Facultative Species
Marbled Salamander	Snapping Turtle
Blue-spotted Salamander*	Eastern Mud Turtle
Jefferson Salamander	Spotted Turtle
Spotted Salamander	Eastern Painted Turtle
Eastern Tiger Salamander*	Red-spotted Newt
Eastern Spadefoot	Four-toed Salamander
Wood Frog	American Toad
	Fowler's Toad
	Pine Barrens Treefrog*
	Northern Gray Treefrog
	Southern Gray Treefrog*
	Upland Chorus Frog
	New Jersey Chorus Frog
	Northern Cricket Frog
	Green Frog
	Southern Leopard Frog
	Northern Spring Peeper
	Long-tailed Salamander

* Listed as a New Jersey state endangered species

** Listed as a New Jersey state threatened species

NEW JERSEY DIVISION OF FISH AND WILDLIFE AMPHIBIAN AND REPTILE ATLAS PROJECT

Section 4

Appendix

Including:

Glossary

Reference Materials

Photo Credits

Data Sheet for copying

Wildlife Conservation Corps Volunteer Monthly Report Form

ENSP Herptile Atlas Identification Letter

GLOSSARY

Anal plate: scale (single or divided) that is just in front of the anus of a snake

Anterior: towards the front

Aquatic: organism that lives in the water

Arboreal: organism that prefers to climb in vegetation such as trees, shrubs and vines

Band: a marking that encircles the body, is perpendicular to the length of the body

Bar: a roughly rectangular marking, generally runs across the body

Barbels: small fleshy projections

Carapace: upper part of a turtle shell

Costal groove: thin vertical groove on side of salamander's body in the area between the front legs and back legs

Dorsal: referring to the back

Dorsolateral: a region on the back, but more towards the sides than the middle of the back

Flank: the side of the body, running from the front legs to the hind legs

Ground color: more of the body is this color than any other color. Patterns are superimposed on this background color. For reptiles, I use this term to refer to the back and sides, and describe the ventral coloring separately.

Hybrid: offspring of a cross between two different species

Iris: colored portion of the eye

Keeled scale: scale has a protruding, lengthwise ridge

Keeled tail: tail forms a narrow, knife-edge on top

Lateral: referring to the side

Longitudinal: a marking that runs in the same direction as a line would run from the head to the tail

Melanism: black coloration, may obscure any pattern that would otherwise be apparent

Middorsal: along the middle of the back

Midline: an imaginary line running lengthwise down the middle of the body

Nasolabial groove: thin line that runs down from nostril to lip in some salamander species

Nocturnal: active mostly at night

Parotoid gland: gland found on shoulder, neck or behind eye of toads; the gland usually forms a large swelling

Plastron: bottom part of a turtle shell

Posterior: towards the rear

Reticulation: a net-like pattern, sometimes like a pattern of interwoven circles

Ring: a marking that encircles the body

Scute: horny plate that forms a distinct segment of a turtle shell

Speckles: very small spots or flecks

Stripe: a marking that runs lengthwise along the body; may run part or all of the length of the body

Terrestrial: organism that mostly lives on land, not in the water

Tympanum: eardrum

Vent: excretory opening at base of belly

Ventral: referring to the underside of the body (that is, the side the vent is on)

NEW JERSEY HERP ATLAS

SUGGESTED REFERENCE MATERIALS

Field Guides:

Behler, John L., and F. Wayne King. 1979. *The Audubon Society Field Guide to North American Reptiles and Amphibians*. Knopf. 718 pp. This is a photographic field guide approach.

Conant, Roger, and Joseph Collins. 1998. *A Field Guide to Reptiles and Amphibians of Eastern and Central North America*. 3rd Edition. Peterson Field Guide Series. Houghton Mifflin. 616 pp. Highly recommended.

Tyning, Thomas F. 1991. *A Guide to Amphibians and Reptiles*. Little, Brown and Co. 400 pp. Part of the Stokes Nature Guide Series, includes detailed life history information.

Other Reference Books:

Bishop, Sherman C. 1994. *Handbook of Salamanders*. Comstock Publishing Co., Cornell University Press, Ithaca, NY. 555 pp.

Carr, Archie. 1995. *Handbook of Turtles: The Turtles of the United States, Canada, and Baja California*. Cornell University Press, Ithaca, NY. 542 pp.

Ernst, Carl H. and Roger W. Barbour. 1972. *Turtles of the United States*. The University Press of Kentucky, Lexington, Kentucky. 347 pp.

Petranka, James W. 1998. *Salamanders of the United States and Canada*. Smithsonian University Press, Washington, D.C. 587 pp.

Wright, Albert Hazen and Anna Allen Wright. 1995. *Handbook of Frogs and Toads of the United States and Canada*. Comstock Publishing Co., Cornell University Press, Ithaca, NY. 640 pp.

Wright, Albert Hazen and Anna Allen Wright. 1957. *Handbook of Snakes of the United States and Canada*. Vol I. and Vol. II. Comstock Publishing Co., Cornell University Press, Ithaca, NY. 1105 pp.

Recordings:

Elliot, Lang, 1992. *The Calls of Frogs and Toads*. Nature Sounds Studio, Inc.

Equipment and Supplies:

Sportsmen's supply, outdoors, and hardware stores will have most of the equipment you need. A thermometer is important for recording temperature for identifying certain frog calls. Hip boots and dip nets may also be helpful to get into small ponds. A flashlight or headlamp will be necessary for evening and night searches. Other things you might find useful include a camera, lightweight binoculars, GPS unit, and a long stick (to turn over rocks in poisonous snake territory).

Sportsmen's stores also usually have U.S.G.S. topographic maps if you want to purchase them. For free internet USGS topographic maps and aerial photos, go to <http://mapping.usgs.gov/partners/viewonline.html>.

Site Name _____ Quad# _____ Block# _____

****MANDATORY--must match site name on topographic map!**

Date _____ Observer _____ GPS Position _____

****DIRECTIONS TO THE SITE:** (One site per sheet for each day out, include town, road & directions)

IMPORTANT INFORMATION--

TIME SPENT SEARCHING ON THIS VISIT: Start Time _____ End Time _____
Use 24 hour time (for example, 2:00 PM = 1400)

YOUR ACTIVITY: _____ (Use code)

1 = Listening 3 = Turning over rocks, logs 5 = Opportunistic (not searching
2 = Walking/searching habitat 4 = Driving (road surveys during rain) for herps at time of sighting)

CONDITIONS: Temperature: _____ Humidity: _____ (Low, medium, high)

SITE DESCRIPTION (circle applicable):

Terrestrial Habitats

Deciduous forest	Suburban area
Coniferous forest	Urban area
Mixed forest	Rock outcropping
Disturbed forest	Beach/dune
Old field	Natural grassland
Agricultural	Garden/lawn
Rural area	

Aquatic Habitats

Lake	Freshwater marsh
Pond	Saltwater marsh
Vernal pool	Wooded swamp
Gravel pit pond	Shrub swamp
River	Fen
Stream / brook	Bog
Drainage ditch	Man-made basin
Seep/spring	Open ocean

NOTES:

Note other life stages of species present, if applicable _____

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Contributor(s):

Name _____

Address: _____

Phone: _____

Return data sheets by September 30 to:

Herp Atlas

Endangered & Nongame Species Program

2201 County Route 631

Woodbine, NJ 0827

	#	Age	Sex	Ver.		#	Age	Sex	Ver.
Turtles					Salamanders				
Common Snapping Turtle					Marbled Salamander				
Common Musk Turtle					Jefferson Salamander				
Eastern Mud Turtle					Blue-spotted Salamander (E)				
Spotted Turtle					Spotted Salamander				
Bog Turtle (E)					Eastern Tiger Salamander (E)				
Wood Turtle (T)					Red-spotted Newt				
Eastern Box Turtle					Northern Dusky Salamander				
Diamondback Terrapin					Mountain Dusky Salamander				
Common Map Turtle					Redback Salamander				
Red-eared Slider					Northern Slimy Salamander				
Redbelly Turtle					Four-toed Salamander				
Eastern Painted Turtle					Northern Spring Salamander				
Eastern Spiny Softshell					Eastern Mud Salamander (T)				
					Northern Red Salamander				
Snakes					Northern Two-lined Salamander				
Northern Water Snake					Longtail Salamander (T)				
Queen Snake									
Northern Brown Snake					Lizards				
Northern Redbelly Snake					Northern Fence Lizard				
Eastern Garter Snake					Five-lined Skink				
Eastern Ribbon Snake					Ground Skink				
Eastern Smooth Earth Snake									
Eastern Hognose Snake					Frogs & Toads				
Northern Ringneck Snake					Eastern Spadefoot (toad)				
Southern Ringneck Snake					American Toad				
Eastern Worm Snake					Fowler's Toad				
Northern Black Racer					Northern Cricket Frog				
Rough Green Snake					Pine Barrens Treefrog (E)				
Smooth Green Snake					Northern Gray Treefrog				
Corn Snake (E)					Southern Gray Treefrog (E)				
Black Rat Snake					Northern Spring Peeper				
Northern Pine Snake (T)					Chorus Frog (ssp. unknown)				
Eastern Kingsnake					Upland Chorus Frog				
Timber Rattlesnake (E)					New Jersey Chorus Frog				
"Coastal Plain" Milk Snake					Bullfrog				
Eastern Milk Snake					Carpenter Frog				
Northern Scarlet Snake					Green Frog				
Northern Copperhead					Wood Frog				
					Southern Leopard Frog				
					Pickerel Frog				

Abundance (#): 1, 2-5, 6-10, 11-25, 26-51, 51-100, 100-999, >1,000

Species Age: **A:** Adult; **J:** Juvenile; **L:** Larvae; **E:** Eggs

Species Sex: **M:** Male, **F:** Female, **U:** Unknown, **MTO:** More than one present

Ver: Verification & Evidence:

P: Photograph	C: Call heard (frogs)	SS: Shed skin (snakes)
TC: Taped call (frogs)	DOR: Dead on road	TR: Tracks
CR: Captured, ID & released	D: Found dead	Other (specify): _____
OB: Observed w/o capturing	R: Remains (bones, shell)	

**NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF FISH AND WILDLIFE
Endangered and Nongame Species Program**

**WILDLIFE CONSERVATION CORPS VOLUNTEER MONTHLY
REPORT**

Name: _____

Report for the month of _____, 2003

Project Name _____

Number of Volunteer Hours _____

Brief Description of Your Activities:

Please submit your reports in any of the following ways that is most convenient for you:

1. Mail your monthly report to:

**Larissa Smith
Endangered and Nongame Species Program
NJ Division of Fish and Wildlife
2201 County Route 631
Woodbine, NJ 08270**

2. Email your reports to llsmith@gtc3.ocm. Be sure to include your name, project name, month and hours.

3. Call (609) 628-2103 to report your hours at the end of each month. When leaving a message, be sure to include your name, project name, month and hours.

By completing this form you are helping ENSP to document the important work that you are doing. Thanks very much for your cooperation!